



The role of intuitive moral foundations in Britain's vote on EU membership

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Abstract

In June 2016, British voters took part in a referendum on the UK’s membership of the European Union (EU). By a margin of 52%:48%, they voted to leave. Studies have demonstrated that fixed demographic factors were the best predictors of voting intentions in either direction, or that ‘Leave’ voters were driven by perceived threats from immigration. In this paper, we examine the role of moral intuitions in referendum voting intentions. In Study 1, demographic variables did not predict voting intentions after adding psychological variables to our statistical model. Instead, voting ‘Leave’ was predicted by political conservatism, social change insecurities, and placing moral importance on personal liberty. In contrast, only an adherence to the care foundation of morality predicted ‘Remain’ voting. These findings were also reflected in linguistic analyses of campaign materials and news items (Study 2). We discuss these data in relation to common discourses around the Brexit vote.

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The role of intuitive moral foundations in Britain's vote on EU membership

On 23rd June 2016, the United Kingdom (UK) held a national referendum on its membership of the European Union (EU). By a margin of 52% to 48%, the resulting vote led to the triggering of Article 50 of the Lisbon Treaty in March 2017, indicating the UK's formal intention to withdraw from its political bond with the rest of Europe. In this paper, we present two studies examining the referendum result with reference to the role of moral intuitions in voting choices.

Moral foundations theory (MFT; Haidt & Joseph, 2004) offers a theoretical approach to understanding how moral intuitions guide our decision-making within the political domain. MFT was formulated by considering data from cultural and evolutionary psychology. There are three key principles underpinning MFT: (1) implicit moral judgements precede rational decision-making; (2) morality is a multi-dimensional construct; and (3) the relative importance attributed to respective moral dimensions is variable across the population.

Haidt (2012) built on seminal work by Tversky & Kahneman (1974) to argue that intuitive cognition typically drives decision-making, with our conscious elaborations being post-hoc justifications of these intuitions. The notion that morality is multidimensional stems from Haidt and Joseph's (2004) work on intuitive ethics. They first identified four such ethics, which they argued make up the majority of our moral intuitions: (1) preventing suffering, (2) respecting hierarchies, (3) acting reciprocally, and (4) behaving purely. In the ensuing years, six *moral foundations* have been identified (Haidt & Graham, 2007; Iyer, Koleva, Graham, Ditto, & Haidt, 2012). These are *care*, *fairness*, *loyalty*, *authority*, *purity*, and *liberty* (see Table 1).

[Insert Table 1 Around Here]

The endorsement of each foundation varies between political groups. On the initial five moral foundations, Haidt (2012) suggested that liberals demonstrate a ‘two-channel’ approach to morality, and value issues around ‘care’ and ‘fairness’ above all others. In contrast, conservatives endorse all five, placing loyalty, authority, and purity on an equal footing with these liberal impulses. The final foundation (liberty) was developed later by Iyer et al. (2012), with liberals scoring higher in the social domain, and conservatives score higher on economic indices.

A small but coherent body of literature has developed since the EU referendum on the psychological antecedents to voting intentions. For example, Meleady, Seger, & Vermue (2017) reported how anti-immigrant sentiment and prejudice was a key predictor of voting ‘Leave’, while contact with immigrants predicted voting ‘Remain’ via the process of reducing such prejudices. Similarly, Abrams and Travaglino (2018) reported how a combination of high levels of perceived threat from immigrants and low trust in politicians was associated with a higher propensity to vote ‘Leave’. Van der Vyver, Leite, Abrams, and Palmer (2018) examined the both person (e.g., conservatism) and social (e.g., identity) factors in pre-referendum voting intentions ($N = 244$) and post-referendum voting behaviours ($N = 197$) to identify the psychological drivers of voting. They found that political conservatism predicted voting ‘Leave’ via ‘realistic threat’ perceptions (operationalised as the feeling that immigrants have too much political power). As such, the desire for a clear and consistent worldview supported by a sense of personal safety may be a driving force behind some ‘Leave’ voter decisions. This is consistent with an ontological security approach to examining political attitudes and behaviours (for a review of this literature, see Giddens, 1991; Laing, 1961). Theoretically, this has links to uncertainty management (van den Bos, 2009) and system justification theory (Jost, Banaji, & Nosek, 2004), in that the maintenance of social order and the continuity of social conditions are offered as (unconscious)

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3 justifications for the oppression of minorities. We test this hypothesis directly in our current
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5 work.

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7 In this paper, we examine the moral intuitions of the 'Remain' and 'Leave' campaigns
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9 and their voters in the EU referendum. Much of the popular debate around 'Brexit' has
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11 focused on the differences between 'Remain' and 'Leave' voters in relation to specific
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13 domains, such as age, education, and prejudice. Further, those studies which have been
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15 conducted view the vote through the lens of needing to understand why people may have
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17 voted 'Leave'. For example, Van der Vyver et al. (2018) grouped 'Remain' voters with those
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19 who were unsure/would not vote in order to predict 'Leave' voting behaviours. We were
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21 interested in taking a more ideologically-neutral approach to understanding the psychological
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23 predictors of the referendum vote on both sides.
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27 Drawing on common themes within the popular discourse surrounding the referendum
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29 itself, in Study 1 we examined the extent to which the moral foundations described above
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31 predicted vote intentions prior to the referendum. After controlling for demographic variables,
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33 we sought to replicate prior findings suggesting that political conservatism and perceived
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35 threats around social change were associated with a propensity to vote 'Leave' (Van der
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37 Vyver et al., 2018). However, we also predicted that higher endorsement of the care
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39 foundation would be predictive of a 'Remain' voting intention. This is due to one of the key
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41 debates around the referendum was related to the plight of refugees entering the continent,
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43 which taps into an impulse to protect society's most vulnerable from potential harm.
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47 In contrast, we hypothesised that higher endorsement of the loyalty, authority, purity,
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49 and liberty foundations would be predictive of an intention to vote 'Leave' in the referendum.
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51 The first three of these foundations are associated with more conservative moral impulses
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53 designed to boost ingroup loyalty and to expel outgroups (a common theme among EU
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55 referendum discourses). That is, those who prefer homogenous social environments
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(indicative of loyalty and purity themes) may wish to reduce levels of immigration from the continent by withdrawing from the EU. Those scoring high on the authority (indicative of a desire for strong leadership) and liberty (indicative of a desire for freedom) may also both support the ‘Leave’ campaign for reasons related to sovereignty. While these two ideas may seem to be juxtaposed, they may represent a desire for control (an authority theme) to be housed internally rather than externally (a liberty theme). We did not differentiate between economic and social liberty at this stage, as both should conceptually be linked to a vote to free the UK from external control of the EU. That is, economic libertarians should endorse a ‘Leave’ vote in order to have control over British finances, while social libertarians should be averse to EU regulation in British life. We did not make any specific predictions in relation to the fairness foundation owing to its conceptual lack of clarity in the empirical literature, and the idea that fairness has been associated with both political liberalism and conservatism (Haidt, 2012). Further, we were unable to identify fairness-related themes in the social discussions about the EU referendum, making predictions difficult to make in relation to this construct.

In Study 2, we sought to examine the presence of each of the moral foundations within official campaign news, such as to triangulate our data from Study 1. Our hypotheses for this analysis mirrored those for Study 1. That is, we expected to find a significantly higher proportion of ‘care’-related words in Remain campaign materials, and ‘loyalty’-, ‘authority’-, ‘liberty’-related words in Leave campaign materials.

Study 1

Methods

Participants. Using the G*Power algorithm, a minimum sample size of 166 was required to detect medium-sized effects with 95% power. We purposively sought to over-

sample to account for incomplete responses, and to be able to generalise our findings more broadly than a minimally-powered study would allow (e.g., Van der Vyver et al., 2018). In total, 668 people started our online survey. Of these, eight were removed as respondents did not meet the eligibility criteria for voter status, and 154 were removed due to incomplete data (indicating study withdrawal). This left a final sample of 506 (351 males, 153 females, 3 participants did not disclose gender) aged 18-80 years ($M_{\text{age}} = 33.37$ years, $SD = 13.87$). This represents a 76% completion rate for eligible respondents who started the survey. Responses were collected between March-June 2016.

Participants were recruited using targeted online advertisements to recruit as politically-diverse a sample as possible. First, we targeted general community groups using *Facebook*. These posts were embedded into community groups spanning several regions of the UK and encompassed urban and more rural areas. Next, we used personal *Twitter* feeds to distribute the study link to a more professionally-based audience. Finally, we posted the study link on the biggest *Reddit* forums for each of the five main political parties in the UK (the Conservatives, Labour, the Liberal Democrats, the Green Party, and UKIP), as well as specific forums for discussing British politics and the EU referendum itself. All advertisements encouraged the sharing of the link to facilitate snowball sampling to occur.

Measures.

Demographic questionnaire. Participants were asked to provide information about their sex, age, highest qualification, and political views (measured using a single item 11-point scale, ranging from -5 to +5; negative scores = liberal, positive scores = conservative).

Referendum voting intentions. Participants indicated their referendum voting intentions using a forced-choice approach ('Remain', 'Leave', or 'Will not vote'). We

supplemented this with a Likert-style question about participants’ commitment to this voting intention, anchored from 0 (‘Not at all committed to this choice’) to 10 (‘Very committed to this choice’). We then computed a vote commitment score by coding the forced-choice question (‘Remain’ = -1; ‘Leave’ = 1), and then multiplying this by the commitment question score. This created a scaled variable, ranging from -10 (strongly committed to vote ‘Remain’) to +10 (strongly committed to vote ‘Leave’). The used of this scaled variable was also important to account for post-referendum discussions. That is, if particular moral impulses are strongly associated not only with a propensity to vote in a particular way, but also with a firm and unwavering commitment to that choice, these themes could be particularly important in the context of seeking to reduce the growing levels of political and social polarisation since the referendum took place (Lord, 2018). Using a binary outcome ‘Remain’ vs. ‘Leave’ variable in our analyses did not meaningfully change our results in this study (see Online Supplementary Materials).

Moral Foundations Questionnaire. We used the 32-item moral foundations questionnaire (MFQ; Graham et al., 2012) to examine participants’ endorsement of each of the five original moral foundations (care, fairness, authority, loyalty, and purity). The MFQ is comprised of six items per foundation, scored on a six-point Likert scale from 0 to 5. Two ‘catch’ questions are also included to check that participants are paying attention to the scale when responding, and to encourage participants to use the extremes of the Likert scales. Average scores and Cronbach’s alpha (Table 2) for each foundation were computed using the syntax provided on MoralFoundations.org (the full scale is also available open-access at this address).

[Insert Table 2 Here]

Liberty foundation measure. We used Iyer et al.'s (2012) nine items for measuring endorsement of the liberty foundation and distributed these randomly among the other MFQ items. Owing to the MFQ's questionable internal consistency (particularly care and fairness), we first subjected these nine items to principal components analysis to establish whether they held together as a single factor (Table 3).¹ After examining item loading coefficients, and considering advice on MoralFoundations.org, we decided to only consider factor one for our analysis of the liberty foundation. This is due to the small number of items in factors two and three making it difficult to obtain reliable estimates for these factors. Our six-item liberty foundation measure demonstrated good levels of internal consistency, and a significant difference between 'Remain' and 'Leave' voters was observed (Table 2).

[Insert Table 3 Around Here]

Ontological Insecurities Scale. We used the 14-item two-factor Ontological Insecurities Scale (OIS; <ANONYMOUS>, under review) in order to examine participants' insecurities in relation to 'social change' (e.g., "The pace of social change is too quick"; $\alpha = .94$) and 'systemic inequality' (e.g., "We live in a fair society"; $\alpha = .70$). Each item is answered using a six-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). Average scores are then computed for each factor. Each OIS factor taps into a construct that prior work has identified as being important in predicting Brexit voting intentions (see Van der Vyver et al., 2018).

¹ This analysis was conducted as the MFQ has been used in a large number of existing papers, but the liberty measure has not. Thus, we felt more comfortable adapting the liberty measure (if required) and allowing our main MFQ data to stand to allow for direct comparison to other samples. We discuss issues related to the measurement of moral foundations towards the end of this paper.

Procedure. Participants were invited to take part in an online survey study using the methods described above. Interested parties clicked on a link to the survey embedded in the study advertisement and were directed to an overview of the project. They were asked to explicitly indicate their informed consent prior to data collection. On the first page, participants completed the demographic questionnaire. They were then asked about their intentions to vote in the EU referendum, before completing the MFQ and OIS in a randomized order.

This procedure received ethical approval from a departmental review committee prior to data collection.

Results

Data cleaning. Participants were removed if they failed both of the MFQ ‘catch’ questions, or indicated that they were not planning to vote in the EU referendum. This process led to the exclusion of data from 96 participants, leaving 410 valid datasets (80% of the completed responses) for analysis.

Moral foundations as predictors of Brexit voting. We ran a series of between-groups *t*-tests to examine whether there were differences in the mean levels of endorsement for each of the moral foundations between remain and leave voters (see Table 1). The results indicated moderate-to-large differences between the voter groups in relation to their endorsement of each of the moral foundations. Remain voters scored significantly higher on the care and fairness foundations, while leave voters more highly endorsed the loyalty, authority, purity, and liberty foundations. These broadly mirror prior differences reported between political liberals (similar to ‘Remain’ voters) and conservatives (similar to ‘Leave’) and are generally supportive of our hypotheses.

We next used a three-stage hierarchical linear regression approach to predict EU referendum voting intentions. We first entered the demographic variables of sex, age, and educational attainment. At stage two we added each of the moral foundations in order to examine the additive effects of these factors in predicting referendum voting intentions. At stage three we added our continuous political ideology variable, along with both factors of the OIS to the model to investigate whether these morality-based effects held while controlling for other known psychological predictors of the vote. In this analysis, participants with any missing data were excluded in a pairwise manner. Table 4 presents the zero-order correlations between each of our variables. For clarity of presentation, we present a narrative of these results below, with statistical information in Table 5.

[Insert Table 4 Around Here]

The model was significant at stage one, explaining 3.5% of the variance in EU voting intentions ($F(3, 411) = 5.04, p = .002, R^2 = .035$). Increased age and lower educational attainment were significantly associated with an intention to vote 'Leave'.

The model at stage two was also statistically significant, explaining 30.7% of the variance in voting intentions ($F(9, 405) = 21.41, p < .001, R^2 = .307$). After adding the moral foundations to the model, no demographic variables independently predicted voting intentions. However, higher endorsement of the purity and liberty foundations were significantly associated with an intention to vote 'Leave', while higher endorsement of the care foundation significantly predicted a 'Remain' vote. While the loyalty foundation trended in the expected direction (towards a tendency to vote 'Leave'), this marginally failed to reach statistical significance ($p = .051$).

At stage three, the model remained statistically significant, and explained 46.8% of the variance in referendum voting intentions ($F(12, 402) = 31.34, p < .001, R^2 = .468$). Here, the purity foundation fell out of the model as a significant predictor and was replaced by increased political conservatism and insecurities about social change (both in the direction of a propensity to vote ‘Leave’). Insecurities about systemic inequalities also trended towards predicting a ‘Leave’ voted, but did not meet the threshold for statistical significance ($p = .054$). Endorsement of the liberty and care foundations remained significant predictors in the expected directions (i.e., towards ‘Leave’ and ‘Remain’, respectively).

[Insert Table 5 Around Here]

Study 2

In Study 2 we sought to conceptually replicate the presence of moral foundations within each referendum campaign by linguistically analysing the content of official campaign news and speeches. This gave us the opportunity to confirm that different moral foundations were important to either side of the referendum while addressing the sampling limitation in Study 1. In doing so, we go further than previous work with non-representative samples (e.g., Van der Vyver et al., 2018) and seek to triangulate our self-reported data.

Data sources

We consulted with the webpages of the Electoral Commission’s officially-designated campaigns’ websites: ‘Britain Stronger In Europe’ (<https://www.strongerin.co.uk/news>), and ‘Vote Leave’ (http://www.voteleavetakecontrol.org/key_speeches_interviews_and_op_ed.html). Stories were sampled if they were published after the official campaign designation, full-text

versions of articles and speeches were available for analysis, and the focus of the materials presented were positive (i.e., the articles or speeches were not simply critiques or attacks on the other campaign). This yielded a total of 140 stories for analysis ('Remain' $n = 86$, 'Leave' $n = 54$).

Procedure

LIWC (Pennebaker et al., 2007) was used to analyse the linguistic properties of the sources collected for Study 2. This software analyses digital written texts in relation to pre-defined linguistic characteristics. We adapted the moral foundations dictionary for LIWC (comprised of words and word stems that relate to care, fairness, loyalty, authority, and purity) to include terms related to the liberty foundation. We first created a new code for this foundation, and assigned this to 25 existing words or word stems within the dictionary (consistent with Graham and Haidt's original approach). We then added 16 new words and word stems to the dictionary that were absent but uniquely related to the idea of liberty (Table 6). A score was computed to represent the proportion of each article containing words for each foundation.

[Insert Table 6 Around Here]

Results

We conducted a one-way (Campaign: Remain vs. Leave) multivariate analysis of variance (MANOVA) to examine the different uses of the care, fairness, loyalty, authority, purity, and liberty foundations. A significant multivariate effect was obtained (Wilks' $\lambda = .75$; $F(6, 133) = 129.82$, $p < .001$, partial $\eta^2 = .25$). Material published by Vote Leave was comprised of significantly more words related to both authority ($F(1, 138) = 40.38$, $p < .001$, partial $\eta^2 = .23$) and liberty ($F(1, 138) = 12.32$, $p = .001$, partial $\eta^2 = .08$), as compared to material

published by the Remain campaign. There were no significant differences between the campaigns’ use of any of the other moral foundations (Table 7).

[Insert Table 7 Around Here]

General Discussion

Overview of key results

In this paper, we have reported two studies examining the presence of moral foundations in the British referendum on EU membership in June 2016. In Study 1, we found that demographic characteristics associated with the Leave vote in polling data (e.g., older age and lower educational attainment) became non-significant once psychological factors were entered into our regression model. Instead, political conservatism, insecurities about social change, and an adherence to the liberty moral foundation significantly predicted intentions to vote ‘Leave’. The purity foundation was also associated with an increase in the likelihood of supporting ‘Leave’ before. This could be related to discussions about the European refugee crisis and immigration being common themes in the run up to the referendum, with those placing moral importance on purity being increasingly likely to want to eliminate those from different cultures (which may be associated with impurity) from the UK context. This effect, however, became non-significant upon the addition of ideology and ontological insecurities to the model, suggesting a potential mediating effect of these latter variables on the predictive validity of the purity foundation. In contrast, and as expected, higher endorsement of the care foundation of morality was the only significant predictor a greater likelihood to support remaining in the EU.

These results question some of the popular commentaries we commonly see about the underpinnings of the EU referendum vote - particularly in relation to those who voted

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3 'Leave'. That is, we expected the loyalty foundation to be among the strongest predictors of
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5 this voting intention. The measurement of the loyalty foundation is comprised of items asking
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7 about "Whether or not someone's action showed love for his or her country" is an important
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9 moral concern, or if respondents agree with items such as "I am proud of my country's
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11 history". While an endorsement of this foundation trended towards predicting a greater
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13 propensity to vote to leave the EU in the stage two of our hierarchical regression, this
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15 prediction was non-significant, and became irrelevant once we added political ideology and
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17 ontological insecurities to the model. Rather than a deep sense of nationalism, a preference to
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19 vote 'Leave' appears to have been based around conservatism (which, admittedly, is
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21 predicted by a temperamental preference for firm category borders; Hirsch, DeYoung, Xu, &
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23 Peterson, 2010), insecurities about social change, and a desire for greater liberty. These data
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25 are consistent with previous work on Brexit (Van der Vyver et al., 2018), and have potential
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27 implications for communicating about the Brexit issue as the UK moves through the process
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29 of leaving the EU (and beyond). That is, there has been a noticeable movement towards anti-
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31 EU parties across Europe in recent years. It could be that accusations of racism and
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33 isolationism do nothing but fuel a further division between those in favour of maintaining
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35 their country's EU member status and those wanting to leave and alienates them from
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37 mainstream political discourse (consistent with Abrams & Travaglino, 2018). Using
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39 information related to moral foundations might help to heal such divisions, with interventions
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41 based on moral psychological processes offering potentially fruitful avenues for further
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43 research on nationalistic populism in the European context.
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49 When looking at the presence of moral foundations in campaign news and speeches
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51 (Study 2), these initial effects were broadly mirrored. That is, there were significantly higher
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53 levels of authority- and liberty-related language in material shared by Vote Leave than by the
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55 Remain campaign. While adherence to the authority moral foundation was not independently
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a significant predictor of referendum voting intentions in Study 1, this may be a reflection of ingroup preference that is reflected in the OIS social change factor that did predicted a ‘Leave’ vote. That is, OIS social change is highly correlated with right-wing authoritarianism, which is subsequently predictive of nationalistic sentiment (Harnish, Bridges, & Gump, 2017). One surprise was the lack of linguistic difference in ‘care’-based language by either campaign. However, endorsement of the care foundation is typically observed to be high across political boundaries, and as such an examination of between-groups differences may not be expected to reach statistical significance (Haidt, 2012).

Mapping the moral foundations within the Brexit campaign

Our data suggest that incorrect polling predictions before the referendum may be due to polling typically ignoring non-conscious psychological motivations that may contribute to political decision-making in favour of demographic representativeness. Given the intense public debate around topics such as immigration in the lead up to the referendum (particularly in relation to the migrant crisis and its links to EU border control), differences in the moral impulses between ‘Remain’ and ‘Leave’ voters are likely to have been brought to the fore. That is, broad differences in the moral intuitions of helping refugees (a ‘liberal’/’Remain’ impulse) and maintaining a strong and ontologically secure sense of national identity (a ‘conservative’/’Leave’ impulse) are likely to have been given much coverage, which plays into both the strengthening of one’s own moral views and the stereotyping of those of your opponents. Further, the ‘Leave’ campaign’s proclamation of being about to control one’s own finances (best exemplified by the apparent mistruth about an additional £350million per week for British healthcare spending, rather than this sum being sent to the EU) may have tapped into a liberty-based drive for self-control.

What is perhaps most interesting from our data, though, is that the loyalty foundation (linked to the protection of ingroup identity) did not significantly predict an intention to vote 'Leave'. Instead, these voters were primarily driven (morally speaking) by an endorsement of the liberty foundation. The importance of this relates to the popular campaigning strategies used by both campaigns at the grassroots level in the run up to the referendum itself. While campaigners for a 'Remain' vote recruited a large number of academics and expert economists to make the case that Britain was "stronger, safer, and better-off" inside the EU, those attempting to mobilise people to vote 'Leave' had a simple intuitive message: "take back control". Moral psychologists have written for several years that people tend to make highly-charged political decisions using intuitive processes, and then to rationalise these through verbal elaboration and justifications (Haidt, 2001). According to this framework, the most effective way to change somebody's mind, or to convince them of a particular proposition, is to speak to their intuitions rather than their rationality. Examining the two referendum campaigns, it is clear that those aligned with the 'Leave' campaign held a better understanding about (a) the nature of moral psychology, and (b) the moral intuitions of undecided voters, than those involved with the 'Remain' campaign.

Limitations and future directions

Project-specific methodological issues. There are some methodological limitations with our study that should be considered when interpreting the key findings. Firstly, we used a self-selecting opportunity sample by advertising the survey for Study 1 on open social media platforms. While this is not necessarily a substantial issue in itself, and is consistent with many published articles in this area, this approach does have the potential to introduce bias into both the sample and the data. For example, it has been documented that respondents to online surveys are typically younger and more politically liberal than the general

population. This was exemplified in the present study through an over-representation of ‘Remain’ voters in the present sample as compared with the actual result of the referendum. To mitigate this limitation, we sought to conceptually replicate the effects obtained from self-report methods by examining the moral foundations in campaign materials (e.g., speeches and news items). However, future studies may be advised to make use of managed panel recruitment initiatives for more balanced participant recruitment.

Furthermore, our political orientation measure, which was one of the best predictors of EU referendum voting intentions among those in our sample, was comprised of a single item scale, anchored from ‘very liberal’ to ‘very conservative’. However, in light of recent political trends, and contemporary research into the nature of political ideologies, a more holistic approach might be to measure political orientation using multiple items incorporating both economic and social facets (Malka, Soto, Inzlicht, & Lelkes, 2014). When examining political orientation in future studies, it may be interesting to distinguish between the relative importance of social and economic conservatism in voting intentions.

Evaluating the measurement of moral foundations. While the MFQ and liberty measures performed generally as expected in relation to their relationships to voting intentions, we do have some concerns of the psychometric properties of these scales. In relation to the MFQ itself, we found that each of the foundations possessed suboptimal internal consistency coefficients. While this could be a by-product of our embedding the liberty questions in with the MFQ in Study 1, our observations about these coefficients are not anomalous to other published studies. For example, Graham et al. (2012) reported very similar Cronbach’s alpha coefficients to those found in the current sample, while an earlier iteration of the MFQ (Graham, Haidt, & Nosek, 2009) reported alpha coefficients that were consistently below .70. In response to this, we have since undertaken a principal components

analysis of the MFQ, finding a five-factor structure (though only three of these factors appear psychometrically useful; see Online Supplementary Materials). With this in mind, future research might be inclined to focus broadly on refining the measurement of moral foundations.

Similarly, we failed to replicate Iyer et al.'s (2012) two-factor model of liberty in our sample, with the direction of the scoring of some items in our factor analysis suggesting conceptual issues with the framing of the items used to calculate a score for this foundation. For example, the item "The Government should do more to advance the common good, even if that means limiting the freedom and choices of individuals" was positively associated with the scale, meaning agreement with this was taken to indicate endorsement of the liberty foundation. While the face validity of the scoring is not 100% clear, the factor in the main does appear to be tapping into impulses related to liberty (four of the six items are explicit in this regard, and the final item references group norms and traditions (in contrast to individual liberty), which may implicate the reverse-scoring). Further, the factor did predict EU voting intentions in the expected direction. Nonetheless, further work is required to formalise, standardise, and validate the measurement of the liberty foundation.

Thus, we argue that while the items making up the MFQ and liberty measures may in general be suitable for investigating moral foundations, they may not be optimal in doing so. The MFQ was developed using a relatively small number of items (Graham et al., 2012), and so a re-conceptualisation of the measure, using a much larger pool of potential items that also bring in themes related to liberty, may be a fruitful direction for research in this area of inquiry. This work should take a cross-cultural approach, such as to conform to the cultural and evolutionary nature of the core framing of moral foundations theory (Haidt, 2012), and facilitate the development of a more valid and internally consistent measure of these constructs.

Concluding remarks

In sum, we would encourage those on both sides of the political divide to develop a better appreciation for the moral intuitions of their political opponents. Far from being “thick”, “racist”, “stupid”, or “idiots” (the first four descriptors to appear as auto-fill options for a Google search beginning with the phrase “Brexit voters are...” at the time of writing), those individuals who voted to leave the EU may have seen this as their opportunity to ‘take back control’ (a sentiment related to the liberty moral foundation) of their countries finances and sovereignty. Similarly, those on the other side of the vote placed moral value on care for those at the bottom of the social ladder, and were not “traitors” (the number one auto-fill option for a Google search beginning “Remain voters are...”).

We have highlighted that moral intuitions play a key role in informing political decisions that are likely to have both immediate and long-term effects on a nation’s social, cultural, and economic prospects. A positive response to this finding would be to place an increased theoretical and practical importance on understanding these intuitive differences in order to promote compromise and constructive debate, and to begin to address the polarisation and division that we are experiencing in politics across a range of modern democracies.

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For Peer Review

Table 1. Overview of the moral foundations

Foundation	Definition
Care	The impulse to protect the vulnerable from harm (stemming from our evolutionary history of caring for offspring)
Fairness	The belief that inputs will be aligned with outputs, and that those who do good will be rewarded (associated with the law of karma)
Loyalty	A sense of ingroup pride and affinity to one’s family or nation (stemming from our evolutionary history of tribal living)
Authority	An investment and respect for social hierarchies (associated with the belief that order can be maintained through fixed structures)
Purity	The striving to avoid pathogenic stimuli, such as rotten foods (now extended into the social domain and applied to ‘pathogenic’ activities, such as cross-cultural relationships and immigration)
Liberty	A desire to have self-determination and to be free from external control. Divided into ‘economic’ and ‘social’ facets

Table 2. Reliability coefficients and average foundation scores between voter groupings (Study 1)

	<u>Average score</u>			<u>Significance testing</u>			
	α	'Remain'	'Leave'	t	p	95% CI (difference)	d
Care	0.63	4.53 (0.69)	4.05 (0.87)	6.93	< .001	[0.35, 0.62]	0.61
Fairness	0.63	4.78 (0.61)	4.34 (0.77)	7.02	< .001	[0.31, 0.56]	0.63
Authority	0.75	3.12 (0.86)	3.77 (0.99)	7.72	< .001	[-0.81, -0.48]	0.70
Loyalty	0.73	2.91 (0.78)	3.49 (0.90)	7.63	< .001	[-0.73, -0.43]	0.69
Purity	0.81	2.41 (0.93)	2.94 (1.12)	5.76	< .001	[-0.71, -0.35]	0.52
Liberty	0.73	3.83 (0.81)	4.52 (0.89)	9.06	< .001	[-0.85, -0.55]	0.81

Note. Average scores represent mean values, with standard deviations presented in parentheses.

Table 3. Item loadings for Iyer et al.’s (2012) liberty foundation items (Study 1)

Item	Factor		
	1	2	3
Society works best when it lets individuals take responsibility for their own lives without telling them what to do	.772	.035	-.190
I think everyone should be free to do as they choose, so long as they don’t infringe upon the equal freedoms of others	.684	.412	-.017
The Government interferes far too much in our everyday lives	.638	-.310	-.115
People who are successful in business have a right to enjoy their wealth as they see fit	.598	-.496	-.063
The Government should do more to advance the common good, even if that means limiting the freedom and choices of individuals	.558	.005	-.509
People should be free to decide which group norms and traditions they themselves want to follow	-.535	.193	-.086
Whether or not private property was respected	.380	.652	-.098
Whether or not everybody was free to do as they wanted	.436	-.371	.617
Property owners should be allowed to develop their land or build their homes in any way they choose, so long as they don’t endanger their neighbours	.460	.433	.598

Note. Loadings in bold indicate the factor to which that item belongs. Negative factor loading indicates that the item should be reverse-scored in subsequent analyses.

Table 4. Zero-order correlations between variables in the regression analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. EU vote	-												
2. Sex	-.02	-											
3. Age	-.13**	.26***	-										
4. Education	-.11*	.02	.10*	-									
5. Ideology	.59***	-.03	.12**	-.11*	-								
6. OIS-1	.63***	-.03	.17***	-.09	.69***	-							
7. OIS-2	-.22***	.06	.04	.06	-.41***	-.26***	-						
8. Care	-.29***	.36***	.13**	-.05	-.34***	-.39***	.34***	-					
9. Fairness	-.29***	.03	-.03	.02	-.46***	-.39***	.34***	.55***	-				
10. Loyalty	.35***	.07	.17***	-.22***	.43***	.49***	-.19***	.07	-.11*	-			
11. Authority	.35***	.20***	.23***	-.18***	.56***	.54***	-.26***	-.00	-.19***	.69***	-		
12. Purity	.30***	.27***	.29***	-.22***	.43***	.50***	-.10*	.20***	-.12*	.59***	.71***	-	
13. Liberty	.38***	-.02	.03	-.14**	.35***	.30***	-.34***	-.14**	-.12*	.39***	.19***	.12*	-
<i>M</i>	-	-	33.54	.60	-1.66	2.72	3.89	4.36	4.63	3.16	3.39	2.64	3.94
<i>SD</i>	-	-	14.14	.49	2.78	1.21	.91	.81	.71	.90	.98	1.05	.89

Note. EU vote represents the scaled vote commitment score; Sex = 0 (female) to 1 (male); OIS-1 = social change insecurities; OIS-2 = systemic inequality insecurities.

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5. Three-stage hierarchical linear regression predicting EU referendum voting intentions (Study 1)

Predictor	Stage 1				Stage 2				Stage 3			
	B	SE B	β	<i>p</i>	B	SE B	β	<i>p</i>	B	SE B	β	<i>p</i>
Sex	-1.01	.94	-.05	.285	.02	.89	.00	.985	1.03	.78	.06	.188
Age	.10	.03	.16	.002	.05	.03	.07	.094	.03	.02	.04	.271
Education	-2.21	.86	-.13	.010	-.33	.76	-.02	.677	-.74	.67	-.04	.269
MFQ Care					-2.82	.61	-.26	< .001	-1.36	.56	-.13	.015
MFQ Fairness					-.79	.62	-.07	.205	.58	.57	.05	.307
MFQ Loyalty					1.14	.58	.12	.051	.47	.52	.05	.366
MFQ Authority					.62	.61	.07	.305	-.62	.56	-.07	.266
MFQ Purity					1.35	.52	.17	.010	-.16	.49	-.02	.733
MFQ Liberty					2.56	.42	.27	< .001	1.71	.40	.18	< .001
Ideology									.91	.18	.29	< .001
OIS-1									2.77	.40	.39	< .001
OIS-2									.79	.41	.08	.054
Model overview	$R^2 = .035, F(3, 411) = 5.04, p = .002$				$R^2 = .322, F(9, 405) = 21.41, p < .001$				$R^2 = .483, F(12, 402) = 31.34, p < .001$			
R^2 change					$.287, F(36, 405) = 28.58, p < .001$				$.161, F(3, 402) = 41.74, p < .001$			

Note. OIS-1 = social change insecurities; OIS-2 = systemic inequality insecurities. High scores on the outcome measure indicates a stronger intention to vote 'Leave'. B = unstandardised beta-values; β = standardised beta-values. Significant predictors presented in **bold**.

Table 6. Words and word stems associated with the liberty foundation in the modified LIWC dictionary (Study 2)

Existing words and word stems	Additional words and word stems
exploit	free
exploits	freedom
exploited	liberty
exploiting	autonom*
rights	choice
obey*	choose
obedien*	liberate
duti*	liberation
order*	sovereign*
supremacy	independent
control	independence
submi*	dictat*
serve	totalitar*
abide	coerc*
defere*	authoritarian*
defer	tyran*
defian*	
rebel*	
dissent*	
subver*	
disobe*	
defy*	
defector	
nonconformist	
protest	

Table 7. Linguistic prevalence of moral foundations in campaign materials (Study 2)

Foundation	Remain	Leave	Statistics
Care	0.75 (0.66)	0.61 (0.48)	$F(1, 138) = 1.87, p = .178, \eta^2_p = 0.01$
Fairness	0.22 (0.56)	0.24 (0.22)	$F(1, 138) = 0.07, p = .793, \eta^2_p < 0.01$
Loyalty	0.78 (0.65)	0.77 (0.48)	$F(1, 138) = 0.02, p = .896, \eta^2_p < .01$
Authority	0.38 (0.35)	0.79 (0.40)	$F(1, 138) = 40.38, p < .001, \eta^2_p = 0.23$
Purity	0.06 (0.16)	0.04 (0.08)	$F(1, 138) = 0.21, p = .649, \eta^2_p < 0.01$
Liberty	0.47 (0.50)	0.78 (0.50)	$F(1, 138) = 12.32, p = .001, \eta^2_p = 0.08$

Note. Values represent the percentage of campaign materials comprised of words related to each of the moral foundations (*SD* in parentheses).